

AMENDMENTS

Please amend the application as indicated hereafter.

In the Claims

Please amend the claims as indicated below. The language being added is underlined (“ ”) and the language being deleted contains strikethrough (“~~—~~”):

1. (Currently Amended) An apparatus for low-damage anisotropic electron dry etching of a substrate, comprising:
 - a plasma reactor for containing a plasma; and
 - a mechanical support within said plasma reactor adapted to receive said substrate, said mechanical support isolated from the creation of the plasma; ~~and~~
 - an additional structure disposed within the plasma reactor proximal to the mechanical support, at least a portion of the additional structure extending into the plasma at a time when the plasma reactor contains the plasma; and
 - a pulse waveform power source adapted to electrically bias the additional structure to direct the electrons from the plasma towards the substrate, the bias providing sufficient energy for the electrons to etch material from the substrate.
2. (Previously Presented) The apparatus of claim 1, wherein said additional structure is dc electrically biased.
3. (Canceled)

4. (Original) The apparatus of claim 1, wherein said additional structure is both ac and dc electrically biased.

5. (Original) The apparatus of claim 1, wherein said mechanical support is electrically isolated from the plasma creator.

6. (Original) The apparatus of claim 5, wherein said additional structure is electrically isolated from both the mechanical support and from the plasma creator.

7. (Original) The apparatus of claim 6, wherein said additional structure is dc electrically biased

8. (Canceled)

9. (Original) The apparatus of claim 6, wherein said additional structure is both ac and dc electrically biased.

10. (Original) The apparatus of claim 1, further including:

an electrically insulating member disposed on the mechanical support, the electrically insulating member circumscribing a portion of the mechanical support.

11. (Previously Presented) The apparatus of claim 10, wherein the electrically insulating member is in communication with the additional structure.

12. – 15. (Canceled)

16. (Currently Amended) An apparatus for low-damage anisotropic low energy electron enhanced etching of a substrate, comprising:

a plasma reactor;

plasma creation means at least partially disposed within the plasma reactor for creating a plasma having positively charged ions and electrons;

a substrate holder disposed within the plasma reactor for receiving a substrate, wherein the substrate holder is isolated from the plasma creation means;

electron etcher means for etching material from the substrate ~~received by the substrate holder~~ with electrons from the plasma, wherein the electron etching means is in electrical communication with the substrate holder; and

charged particle controller means, disposed proximal to the substrate holder, for controlling the flux of charged particles directed from the plasma onto a substrate disposed on the substrate holder, the flux having sufficient energy for the electrons to etch material from the substrate ~~the charged particle controller means disposed proximal to the substrate holder.~~

17. (Original) The apparatus of claim 16, wherein the charged particle controller means is adapted to control the energy of charged particles being impacted onto the substrate.

18. (Original) The apparatus of claim 16, further including:

a charged particle blocking means for preventing charged particles in the plasma from reaching the substrate unless the charged particles pass through the charged particle controller means.

19. (New) The apparatus of claim 16, further comprising:

a pulse waveform power source adapted to electrically bias the charged particle controller means to direct the electrons from the plasma towards the substrate.

20. (Previously Presented) The apparatus of claim 19, wherein said pulse waveform power source is further adapted to periodically bias the charged particle controller means to direct ions from the plasma towards the substrate to electrically neutralize the substrate.

21. (Previously Presented) The apparatus of claim 19, wherein said pulse waveform power source is adapted to cycle between a positive electrical potential and a negative electrical potential, and wherein the positive potential is such that electrons having kinetic energy less than 100 electron-volts are attracted to the substrate and etch material therefrom.

22. (Previously Presented) The apparatus of claim 21, wherein a waveform of a pulse wave supplied by the pulse waveform power source is defined by a period having a first predetermined interval at the positive electrical potential and a second predetermined interval at the negative electrical potential, wherein during the first interval electrons are directed to the substrate, and wherein the second interval is of duration such that a sufficient number of ions are directed to the substrate to substantially neutralize the accumulated electrons on the substrate.

23. (Previously Presented) The apparatus of claim 1, wherein said pulse waveform power source is further adapted to periodically bias the additional structure to direct ions from the plasma towards the substrate to electrically neutralize the substrate.

24. (Previously Presented) The apparatus of claim 1, wherein said pulse waveform power source is adapted to bias the additional structure such that ions of the plasma are directed to the substrate and electrically neutralize the substrate without damaging the substrate.

25. (Previously Presented) The apparatus of claim 1, wherein said pulse waveform power source is adapted to cycle between a positive electrical potential and a negative electrical potential, and wherein the positive potential is such that electrons having kinetic energy less than 100 electron-volts are attracted to the substrate and etch material therefrom.

26. (Currently Amended) The apparatus of claim 21, wherein a waveform of a pulse wave supplied by the pulse waveform power source is defined by a period having a first predetermined interval at the positive electrical potential and a second predetermined interval at the negative electrical potential, wherein during the first interval electrons are directed to the substrate to etch the material from the substrate, and wherein the second interval is of duration such that a sufficient number of ions are directed to the substrate to substantially neutralize the accumulated electrons on the substrate.